## CONTENTS

**TABLES**

# INTRODUCTION

## Background

4.1 This chapter of the Environmental Impact Assessment Report (EIAR) relates to the potential effects of a proposed quarry extension at Mullymagowan, near Stradone in Co. Cavan, on population and human health. The proposed development is situated entirely within the townland of Mullymagowan. However, it is located within a wider landholding by the applicant, which is spread across Mullymagowan as well as the neighbouring townlands of Drummuck and Tirlahode Lower, and within which there is an existing permitted quarry operation (P. Ref. 07/827).

4.2 The application site is in a rural area in the eastern part of Co. Cavan, c. 1.25km east of the N3 (National Primary Road), which links Dublin and Cavan. Access to the site is via the private, dedicated access road to the existing quarry off the R165, c. 3.5km from its junction with the N3.

4.3 The application site comprises previous agricultural land, part of which has been in recent use for storage of materials by the applicant (as agreed with Cavan County Council). Despite having good strategic links with the R165 and N3 roads, it is situated in a relatively remote location with a long history of quarrying activity. The nearest small settlement is Lavey, which is situated c. 2km to the northwest, along the N3, which is host to a number of dispersed services within the wider area. Larger settlements in the wider area include Stradone, c. 4.5km north and Cavan town, c. 10km northwest.

4.4 The area surrounding the application site is rural and agricultural in nature, with coniferous woodland and minor worked gravel pits dispersed across it. Small-scale residential buildings and farmsteads are scattered throughout the surrounding landscape. There are c. 46 dwellings within a 1km radius of the application site boundary, c. 42 of which are occupied[1].

4.5 The in-situ rock deposits to be extracted occur beneath a layer of overburden material, located northwest of the previously worked quarry area. The applicant for the proposed development is P&S Civil Works Ltd. (further details of whom are provided in Chapter 1 of this EIAR), and planning permission has been granted previously for the proposed works (P. Ref. 12/101). This planning permission is due to expire in early 2023, hence the need for a new planning application.

4.6 The proposed development provides for:

- Quarry extension development for rock extraction and associated processing over an area of c. 4 hectares within an overall planning application area of c. 4.9 hectares as previously permitted under P. Ref. 12/101 (P. Ref. 17/383) and never commenced;
- A time period of 15 years is being sought to allow the previously permitted extraction be completed plus 2 years to complete restoration works (total duration sought 17 years);
- The development proposed seeks to utilise existing ancillary buildings and facilities including weighbridge, wheelwash, portacabin office/canteen/toilet, waste water treatment system, processing plant, site entrance and all other associated site works, and ancillary activities as currently permitted by P. Ref. 07/827; and
- Final restoration of the worked out quarry to a permanent water body and naturally regenerated wildlife habitat area.

[1] According to https://viewer.myplan.ie/ accessed 22 November 2022

For further detail of the proposed development and the application site context, refer to Chapter 2 of this EIAR.

## Scope of Work / EIA Scoping

4.7 The EPA guidelines in relation to the preparation of EIAR[2] note the following in respect of population and human health:

- assessment of land-use planning and demographic issues or detailed socio-economic analysis is not generally required;
- economic development or settlement patterns are only relevant if they give rise to new development and associated effects;
- human health should be considered in the context of the relevant environmental topics addressed by the EIAR;
- the effects on human health via relevant pathways (such as air, soil and water) should be considered in the context of accepted standards for exposure, dose or risk;
- other health and safety issues are addressed under other EU directives.

4.8 The Institute of Environmental Management and Assessment (IEMA) has recently issued two new guidance documents on the assessment of human health within EIA as follows:

- Effective Scoping of Human Health in EIA; and
- Determining Significance for Human Health in EIA.

4.9 Section 1.11 of the IEMA Guidance on the Effective Scoping of Human Health in EIA recommends that if there is not potential for likely significant population effect, human health should be scoped out of the EIA. The guidance makes clear that the topics of population and human health are separate technical topics. The assessment of socio-economic conditions addressed through the topic of 'Population' provides baseline information on which an assessment of sensitivity of human health can be made, therefore it is considered appropriate that both topics are covered within this chapter.

4.10 **Table 4.1** of this chapter sets out an initial review of the wider determinants of health identified within the guidance on scoping of human health and how these have the potential to be impacted by the proposed development. The initial assessment within **Table 4.1** provides a framework in order to focus the assessment of human health impacts on areas of most relevance.

4.11 This Chapter of the EIAR presents baseline information on population (including employment, amenity and community resources) and assesses likely impacts as a result of the proposed development. This facilitates an assessment of the potential impacts on human health where there is a potential for this to be impacted as identified within **Table 4.1**.

[2] Environmental Protection Agency (2022). *Guidelines on the Information to be Contained in Environmental Impact Assessment Reports.* Environmental Protection Agency, Johnstown Castle Estate, Co. Wexford.

**Table 4-1**
**Wider Determinants of Health and Proposed Development**

| Categories | Wider Determinants of Health | Commentary |
|---|---|---|
| **Health related behaviours** | Physical activity | No changes likely as a result of proposed development |
| | Risk taking behaviour | No changes likely as a result of proposed development |
| | Diet and nutrition | No changes likely as a result of proposed development |
| **Social environment** | Housing | Increased supply of aggregates has potential to support increased housing supply |
| | Relocation | Not relevant, no relocation proposed |
| | Open space, leisure and play | No changes likely as a result of proposed development |
| | Transport modes, access and connections | No changes likely as a result of proposed development, using existing accesses/routes |
| | Community Safety | No changes likely, boundaries of application site will continue to be kept secure |
| | Community identity, culture, resilience and influence | No changes likely, proposed development is continuation of existing activity in a remote location |
| | Social participation, interaction and support | Not relevant to application site/proposed development |
| **Economic environment** | Education and training | Not relevant to application site/proposed development |
| | Employment and income | Proposed development will be a source of continued employment within the local area |
| **Bio-physical environment** | Climate change mitigation and adaptation | Potential for aggregates from site to contribute to developing infrastructure in line with national planning / Increased $CO_2$ emissions from activities on site |
| | Air quality | Potential for air quality impacts from HGV use and dust from activities on site |
| | Water quality or availability | Potential for contaminants in, run-off to, impact on surface water and/or groundwater |
| | Land quality | Removal of minerals, overburden |
| | Noise and vibration | Potential for impacts from site activities |
| | Radiation | Not relevant |
| **Institutional and built environment** | Health and social care services | No changes likely as a result of proposed development |
| | Built environment | Increased supply of aggregates has potential to support enhancements to wider infrastructure |
| | Wider societal infrastructure and resources | Increased supply of aggregates has potential to support enhancements to wider infrastructure |

## Consultations / Consultees

4.12 A formal pre-planning consultation was held between planning staff of Cavan County Council and representatives of SLR Consulting Ireland and P&S Civil Works Ltd. on 10 August 2022.

4.13 Given the limited human health impacts that are anticipated (as set out in **Table 4.1**) no external consultations were undertaken in the preparation of this chapter of the EIAR, although there was extensive consultation with other specialist contributors.

## Contributors / Author

4.14 This Chapter of the EIAR was prepared by Lynn Hassett of SLR Consulting Ireland. Lynn is an EIA Co-ordinator (BSc, MSc) and has experience of Environmental Impact Assessment, project management and planning, with extensive experience of carrying out EIARs throughout Ireland and the UK.

## Limitations / Difficulties Encountered

4.15 No limitation or difficulties were encountered in the preparation of this chapter of the EIAR.

## Legislation, Policy and Guidance

4.16 The specific legislation relevant to human health protection is set out within the technical EIA chapters relevant to each pathway (noise, air, soil, water, etc). The legislation in relation to human health protection is predominantly set out within World Health Organisation (WHO) Guidelines and Limits.

4.17 The WHO works worldwide to promote health, keep the world safe, and serve the vulnerable. Their goal is to ensure that a billion more people have universal health coverage, to protect a billion more people from health emergencies, and provide a further billion people with better health and well-being. It has a wide remit, from setting limits to prevent danger to human health, to providing responses to health emergencies, and promoting health and wellbeing.

4.18 The Institute of Public Health is an organisation that informs public policy to promote health and wellbeing and reduce health inequalities in Ireland and Northern Ireland. It has previously provided comments on draft legislation on EIA and has been represented on the working group for the IEMA guidance on human health in EIA. It has set its Strategic Objectives 2020-2025 in order to be able to fulfil this role to its best potential in informing public health policy. The Institute supports the national implementation of UN Sustainable Development Goals, including SDG3, which focuses on good health and wellbeing.

4.19 The Healthy Ireland Framework was launched by the Irish Government in 2013, with a focus to deliver a vision where '*everyone can enjoy physical and mental health and wellbeing to their full potential, where wellbeing is valued and supported at every level of society and is everyone's responsibility*'. The Healthy Ireland Strategic Action Plan 2021-2025 identifies 6 themes to deliver the vision and identifies relevant government departments as well as specific implementation actions. A network of Healthy Cities[3] and Counties (including one for Cavan) is intended to be developed to deliver the Framework at a local level. One of the commitments within the Strategic Action Plan is to publish a Healthy Cities and Counties Strategic Development Plan.

[3] The Healthy Cities project is a World Health Organization (WHO) movement, established in 1986

4.20 The vision of the Cavan County Development Plan 2022-2028 ('the CCDP') is for a progressive, vibrant county which is smart, connected, innovative, inclusive and sustainable. Sustainable Communities **Policy SCP01** seeks to:

"*Develop safe, active and empowered communities; developing health and wellbeing; promoting social inclusion; and protecting natural resources which simultaneously promoting culturally rich communities. Emphasis will be places on achieving equality and inclusion and enhancing quality of life of all people living in County Cavan*."

4.21 Section 12.3 of the CCDP, in relation to rural economic development, recognises the importance of supporting sustainable sources of income and enterprise, including the extractive industry. It acknowledges the need for balancing the need for rural diversification and employment whilst acknowledging that rural development can be a complex issue. Chapter 4 of the CCDP contains the development objectives in relation to Sustainable Communities that need to be considered in the assessment of planning applications.

4.22 Cavan County Council acknowledges in its CCDP that it has a significant role to play in the provision of healthcare facilities throughout the county by ensuring there is sufficient lands available to accommodate sufficient healthcare facilities. It also states that many of the factors which influence people's health, well-being and quality of life such as access to education, employment, housing, social infrastructure, safety, attractive open spaces are dependent on the location and development of land and buildings. Development objectives HW01 to HW10 set out specific objectives to provide opportunities to enhance the health of residents within the county. The CCDP also contains a range of development objectives in relation to cross-ranging issues pertaining to community and social cohesion and protection. These are set out in further detail in the Planning Statement accompanying this planning application.

4.23 Cavan Local Community Development Committee (LCDC)[4] is independent of the Local Authority, and its remit is to help to create and sustain healthy places for people to be born, grow, live, work and age in. The Cavan Local Economic and Community Plan 2016-2021 was published by the LCDC in 2016 to guide local economic and community development in County Cavan for the timeframe of the Plan. Facilitating healthy and active communities who have a high quality of life and wellbeing was amongst one of the key priorities of the Plan and Goal 10 was entitled 'We will focus on developing the health and wellbeing of our communities'. Objectives were set out to achieve that Goal, as follows:

- **Objective 10.1** Improve the health outcomes for all sectors of the community;
- **Objective 10.**2 Support opportunities for sporting and recreational life within the county, ensuring equal access for all; and
- **Objective 10.3** Develop an integrated, targeted response at a local level to reduce levels of drug and alcohol use among adults and young people.

4.24 Healthy Cavan is a working sub-committee of the LCDC that has been set up to deliver the Healthy Ireland Framework within the county. It runs programmes and activities to promote opportunities for enhancing physical and mental health for residents of the county.

4.25 Section 12 of the CCDP 2022-2028 covers the rural development of the county. Section 12.12, in particular, refers to the quarrying industry. The overarching goal for Cavan County Council in relation to quarrying is to facilitate adequate supplies of aggregate resources for the construction sector and to contribute to economic growth whilst also ensuring that impacts on the

[4] Local Community Development Committees have been set up in every Local Authority in Ireland under the Local Government Reform Act 2014

environment and the community are acceptable. The following policies in relation to the Extractive Industry contained in Section 12.12 of the Plan state:

- ***Q01*** *Safeguard for future extraction all identified locations of major mineral deposits in the County.*
- ***Q02*** *Promote development involving the extraction of mineral reserves and their associated processes, where Cavan County Council is satisfied that any such development will be carried out in a sustainable manner, that does not adversely impact on the environment or on other land uses. Consideration in this regard shall be given to the impact of the development on the local economy.*
- ***Q03*** *Facilitate adequate supplies of aggregate resources to meet the future growth needs of the County and the wider region while addressing key environmental, traffic and social impacts and details of rehabilitation.*
- ***Q04*** *Ensure that projects associated with the extractive industry carry out screening for Appropriate Assessment in accordance with Article 6(3) of the E.C. Habitats Directive and comply with all relevant Environmental Legislation as required.*
- ***Q05*** *Facilitate the exploitation of the County's natural resources and to exercise appropriate control over the types of development, including rural housing, taking place in areas containing proven deposits, whilst also ensuring that such developments are carried out in a manner which would not unduly impinge on the visual amenity or environmental quality of the area.*
- ***Q06*** *Support the extractive industry where it would not compromise the environmental quality of the County and where detailed rehabilitation proposals are provided.*
- ***Q07*** *Seek to ensure that the extraction of minerals and aggregates minimise the detraction from visual quality of the landscape and does not adversely affect the environment or adjoining land uses.*
- ***Q08*** *Ensure that development for aggregates/mineral extraction, processing and associated processes does not significantly impact on the following:*
  - *Existing and proposed Special Area of Conservation and Special Protection Areas*
  - *Existing and proposed Natural Heritage Areas.*
  - *Areas of importance for the conservation of fauna*
  - *Areas of significant archaeological potential*
  - *Recorded Monuments*
  - *Sensitive landscapes*
  - *Public Rights of Way, Walking/Cycling Routes*
  - *Drinking Water Supplies*
  - *County Geological Sites*
- ***Q09*** *Ensure that all quarrying activities and projects associated with the extractive industry comply with all relevant Planning and Environmental Legislation including the Geological Heritage Guidelines for the Extractive Industry.*
- ***Q10*** *To encourage the rehabilitation of disused quarries and extractive sites to possible uses including habitat restoration, agriculture, recreation/amenities, commercial, industrial, and residential or a combination of same, subject to normal planning and environmental considerations.*

4.26 Section 13 of the CCDP 2022-2028 sets out the 'Development Management' requirements of the planning authority, which are the standards and criteria to ensure that development occurs in an orderly and efficient manner. The CCDP, in this section, identifies the relevant technical assessments and reports (such as the EIAR) that may be required to support various planning applications.

4.27 The proposed development is not within any of the specific development types listed within this section of the CCDP and it is not located within a flood risk area. The Development Objectives within the respective sections of the CCDP in relation to environmental protection and control of emissions are set out and addressed within the relevant chapters of this EIAR.

## Guidelines

4.28 As outlined previously, this chapter of the EIAR has been prepared on the basis of the following:

- Guidelines on the Information to be contained in Environmental Impact Assessment Reports, EPA, 2022;
- Effective Scoping of Human Health in EIA, IEMA, 2022; and
- Determining Significance for Human Health in EIA, IEMA, 2022.

## Technical Standards

4.29 There are no technical standards relevant to this chapter of the EIAR. Technical standards, if any, that are relevant to each pathway (noise, air, soil, water, etc.) are addressed elsewhere in each specialist chapter of this EIAR.

# RECEIVING ENVIRONMENT

## Study Area

4.30 The application site covers an area of c. 4.9 hectares, of which c. 4 ha. consist of the proposed extraction area, the same as permitted by P. Ref. 12/101. The site sits within a wider landholding owned by the applicant, of c. 39.7 ha. and which consists of an existing quarry and established processing / ancillary facilities (to the east of the application site).

4.31 The red line application site occupies a slightly elevated area. It reaches an elevation of c. 175m AOD in the southwest corner of the application site. From here, levels fall to c. 165m AOD in the northwest corner, c. 170m AOD in the southeast corner and c. 150m AOD in the northeast corner. There are two public roads dissecting the overall landholding, the L3500 to the east of the application area and the L7503 which immediately bounds the western boundary of the application area. The overall quarry site is accessed / egressed via a dedicated link road to the R165, which crosses the L3500 in the area of the existing administration buildings and weighbridge. Levels along the L7503 (referred to as the 'Mullymagowan Pass') that runs along the western boundary of the proposed quarry extension area are c. 172-165m AOD.

4.32 As stated previously, there are few dwellings in the immediate vicinity of the application site. The greatest concentration of dwellings in the local area is found to the north and south, along the local public road network. There are c. 46 dwellings within a 1km radius of the application site boundary, c. 42 of which are occupied according to information obtained from myplan.ie. The closest residential property to the site is located c. 26m west of the site along the L7503 local road (R1), refer to **Figure 4-1**. The closest third-party residence is located 180m northwest (R2), with

another residence located 235m to the south (R3, indicated as vacant on myplan.ie). There are clusters of residences located to the north and south within 250m and 500m of the application site (a total of 11, 1 of which is indicated as vacant on myplan.ie).

4.33 The study area relates to those land uses, dwellings and buildings on the public road network surrounding the application site as identified on **Figure 4-1**.

## Baseline Study Methodology

4.34 The baseline study comprises a desk-top review of online and published resources, information provided by the applicant and information contained in the other chapters of this EIAR. A review of existing residential housing and local receptors in the vicinity of the application site was undertaken and Ordnance Survey maps and aerial photography were also examined.

## Sources of Information

4.35 Baseline information was obtained from the following sources:

- Myplan.ie (http://myplan.ie/index.html);
- Historic Environment Viewer (http://webgis.archaeology.ie/historicenvironment/);
- Cavan County Development Plan 2022 - 2028;
- Specialist environmental topic chapters of this EIAR;
- Ordnance Survey maps;
- Aerial photography;
- Openstreetmap.org;
- Live Register Statistics;
- Census 2011, 2016 and Preliminary Results of Census 2022.

## Context

4.36 The land use in the immediate vicinity of the application site and wider quarry landholding is predominantly agricultural grazing lands, small-scale forestry and single/ small clusters of residential development.

4.37 The R165 and the N3 regional and national routes are located within close proximity, being 750m northeast and 1.25km southwest of the application site, respectively. The centre of Stradone village is located c. 4.5km to the north.

4.38 **Figure 4-1** shows these features and the closest residential receptors (as described in earlier sections) to the proposed development.

4.39 The Office of Public Works is the government agency with statutory responsibility for flooding in Ireland. Flood mapping and other information published by the Office of Public Works (OPW) suggest that the application site is not within a flood risk area. The GSI Groundwater Flood database does not show any historical groundwater flooding in the area.

4.40 There are no past flood events indicated on the application site or in the wider surroundings of the site from the 'Past Flood Events' mapping.

4.41 The application site is located in Landscape Character Area no. 4 'Drumlin Belt and Uplands of East Cavan', which is further described in Chapter 13 of this EIAR. The assessment within that chapter concludes that the proposed development is unlikely to cause consequential changes to

the surrounding landscape character areas or to existing views of the areas surrounding the application site.

## Environmental and Heritage Designations

4.42 There are no designated nature conservation sites (SAC, SPA, pNHA or NHA) within or adjacent to the application site. The closest such site is the Lough Ramor pNHA, which is located c. 12.9km to the southeast and is separated from the site by the N3 (refer to EIAR Chapter 5).

4.43 There are no recorded monuments within the application site. The closest such sites are located c. 0.5km to the northeast and those identified beyond that are considered too distant to be directly or indirectly impacted by the proposed development (refer to EIAR Chapter 12).

4.44 There are no buildings identified on the National Inventory of Architectural Heritage within or in the vicinity of the application site (refer to EIAR Chapter 12).

## POPULATION

4.45 The review of population is based on the Electoral Divisions (EDs) of Waterloo, in which the application site is situated in its entirety and Stradone, within which a portion of the northeast of the applicant's landholding is situated. These Electoral Divisions are shown in the context of the application site and wider landholding in **Plate 4-1** below.

4.46 The change in population from 2011 to 2022, as per the Census data published for 2011 and 2016 and the preliminary Census data published for 2022, for the 2 EDs, County Cavan and the State is outlined in **Table 4-2** below.

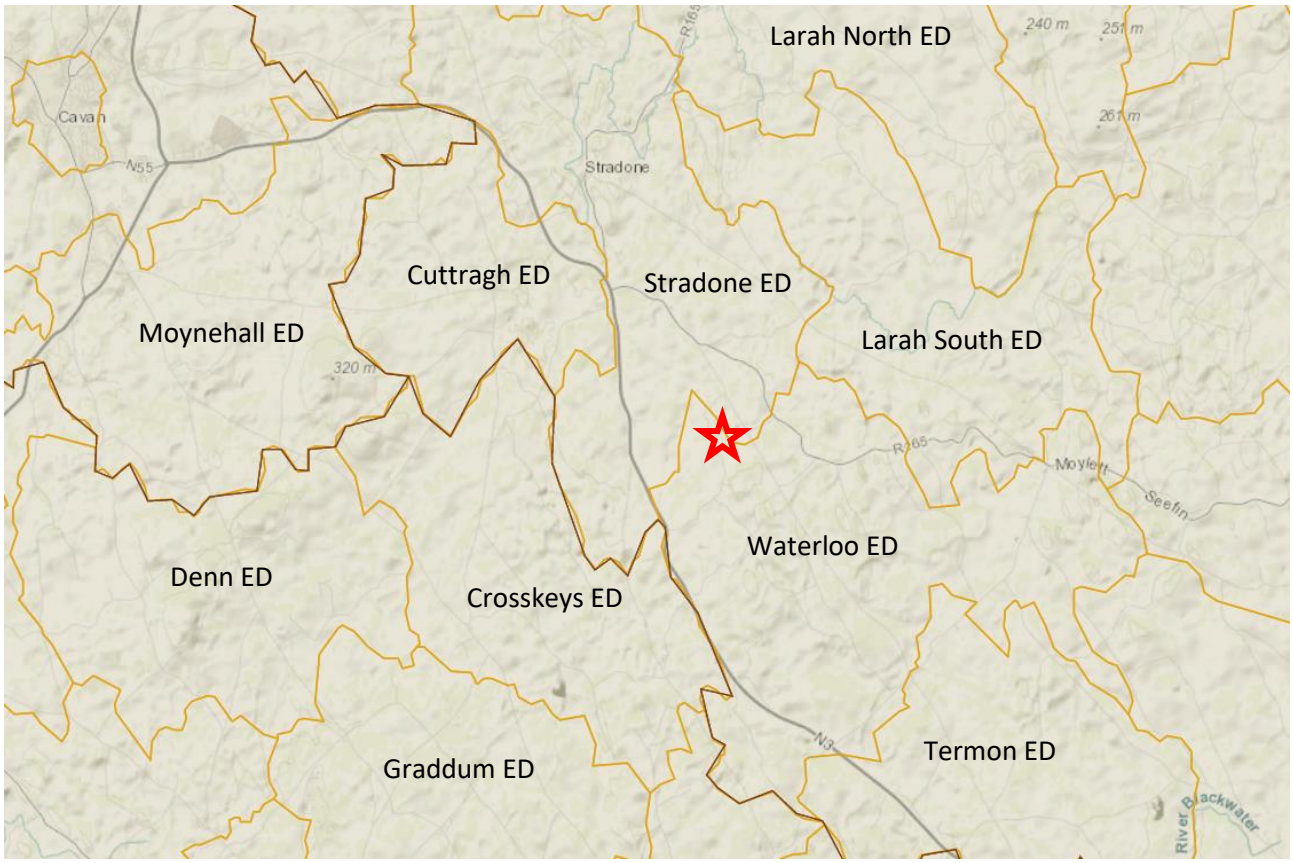
**Table 4-2**
**Population Change 2011 - 2022[5]**

| | 2011 | 2016 | 2022 | % Change 2011-2022 |
|---|---|---|---|---|
| **Waterloo ED** | 758 | 757 | 783 | 3.3% |
| **Stradone ED** | 777 | 766 | 815 | 4.9% |
| **Co. Cavan** | 73,183 | 76,176 | 81,201 | 11.0% |
| **Ireland** | 4,588,252 | 4,761,865 | 5,123,536 | 11.7% |

4.47 The census results indicate that the rate of population growth in the intercensal period within the local EDs has noticeably less than the county and state trends.

[5] https://cso.maps.arcgis.com/apps/webappviewer/index.html?id=4d19cf7b1251408c99ccde18859ff739 and https://data.cso.ie/

**Plate 4-1**
District Electoral Division (DED) Boundary Map
*Extract from CSO – Census Small Area Population Statistics Mapping Viewer*




Site Location

## Employment

4.48 The closest Social Welfare Office to the application site is in Cavan town. According to the October 2022 Live Register statistics[6], there were 2,751 persons served by this office on the live register. This figure has dropped slightly from 2,529 in October 2020 and 2,694 in October 2018. Notwithstanding the downward trend, the current figure remains slightly high compared to the October 2006 figure of 1,750.

4.49 According the results of the 2016[7] Census, of the 591 people aged 15 years or older in Waterloo ED, some 351 were at work, 94 were retired, 47 were students and 46 were looking after home/family. A lower proportion were looking for their first job, unemployed or unable to work due to sickness/disability. Others were students, working in the home, retired, unable to work or other. In Stradone ED, 337 residents out of a total of 585 residents over the age of 15 were at work. 84 were retired, 64 were students and 56 were looking after home/family. Similar to the Waterloo ED, a lower proportion were looking for their first job, unemployed or unable to work due to sickness/disability. In both EDs, there is a substantial proportion of the population under the age of 15. This younger population outweighs the elderly population in both EDs. This is a trend in line with that observed at the county and state level.

[6] https://www.cso.ie/px/pxeirestat/Statire/SelectVarVal/Define.asp?maintable=LRM07&PLanguage=0
[7] https://visual.cso.ie/?body=entity/ima/cop/2016&boundary=C03786V04535&guid=2AE196291FB013A3E055000000000001

4.50 The population of Waterloo and Stradone EDs and County Cavan categorised by their reported occupation[8] at the time of Census 2016 (the latest year for which breakdown is available) is shown in **Table 4-3** below. This shows that the population of Waterloo is slightly less likely to be engaged as directors, manager and senior officials and there is a higher proportion of residents in professional occupations within Stradone ED. Both EDs are host to a higher number of skilled trades people than the county as a whole. The population of Waterloo is less likely to be engaged in process, plant and machine operatives than within the Stradone ED and county.

**Table 4-3**
**Population of Waterloo and Stradone EDs and County Cavan by Occupation**

| | Waterloo | | Stradone | | Cavan County | |
|---|---|---|---|---|---|---|
| **Occupation** | **No.** | **%** | **No.** | **%** | **No.** | **%** |
| Managers, Directors and Senior Officials | 17 | 4.5% | 23 | 6.4% | 2,228 | 6.3% |
| Professional Occupations | 40 | 10.6% | 75 | 20.8% | 4,492 | 12.7% |
| Associate Professional and Technical Occupations | 39 | 10.3% | 19 | 5.3% | 2,651 | 7.5% |
| Administrative and Secretarial Occupations | 49 | 13.0% | 44 | 12.2% | 3,241 | 9.2% |
| Skilled Trades Occupations | 106 | 28.1% | 88 | 24.4% | 7,661 | 21.7% |
| Caring, Leisure and Other Service Occupations | 25 | 6.6% | 13 | 3.6% | 2,761 | 7.8% |
| Sales and Customer Service Occupations | 23 | 6.1% | 23 | 6.4% | 1,889 | 5.3% |
| Process, Plant and Machine Operatives | 26 | 6.9% | 29 | 8.1% | 3,601 | 10.2% |
| Elementary Occupations | 26 | 6.9% | 24 | 6.7% | 3,290 | 9.3% |
| Not stated | 26 | 6.9% | 22 | 6.1% | 3,505 | 9.9% |
| **Total** | 377 | 100% | 360 | 100% | 35,319 | 100% |

4.51 A breakdown of the industry in which those at work are employed[9] at the time of Census 2016 is provided below in **Table 4-4** below. This shows that the industry breakdown of the population of Waterloo and Stradone EDs is largely in line with that of the wider population in Co. Cavan. There is a noticeably larger proportion of Waterloo ED residents working in the agriculture, forestry and fishing sector in comparison to the county situation. There is a higher proportion of residents working in professional services in the Stradone ED.

[8] https://visual.cso.ie/?body=entity/ima/cop/2016&boundary=C03786V04535&guid=2AE196291FB013A3E055000000000001
[9] https://visual.cso.ie/?body=entity/ima/cop/2016&boundary=C03786V04535&guid=2AE196291FB013A3E055000000000001

**Table 4-4**
**Persons at Work in Waterloo and Stradone EDs and County Cavan by Industry**

| | Waterloo | | Stradone | | County Cavan | |
|---|---|---|---|---|---|---|
| **Industry** | **No.** | **%** | **No.** | **%** | **No.** | **%** |
| Agriculture, forestry and fishing | 53 | 15.1% | 44 | 13.1% | 3,455 | 11.3% |
| Building and construction | 31 | 8.8% | 23 | 6.8% | 2,132 | 7.0% |
| Manufacturing industries | 58 | 16.5% | 48 | 14.2% | 5,081 | 16.7% |
| Commerce and trade | 62 | 17.7% | 69 | 20.5% | 5,993 | 19.6% |
| Transport and communications | 13 | 3.7% | 17 | 5.0% | 1,461 | 4.8% |
| Public administration | 21 | 6.0% | 16 | 4.7% | 1,450 | 4.8% |
| Professional services | 69 | 19.7% | 86 | 25.5% | 6,419 | 21.0% |
| Other | 44 | 12.5% | 34 | 10.1% | 4,518 | 14.8% |
| **Total** | 351 | 100% | 337 | 100% | 30,509 | 100% |

## Indices of Deprivation

4.52 Pobal is an organisation that works on behalf of Government to support communities and local agencies toward achieving social inclusion and development. The organisation produces mapping information including on deprivation indices in order to identify areas in need of social/community investment. The overall levels of deprivation have been based on census data in relation to demographic profile, social class composition and labour market situation. According to the deprivation indices[10] based on 2016 census data, both Waterloo and Stradone EDs are categorised as marginally below average (i.e. slightly disadvantaged).

## General Health

4.53 **Table 4-5** presents the results of the 2016 census in relation to the self-reported health status of Waterloo and Stradone ED, Cavan county and State residents.

**Table 4-5**
**Self-reported Health Status - Waterloo and Stradone EDs, County Cavan and State**

| | Waterloo | Stradone | County Cavan | State |
|---|---|---|---|---|
| Very Good | 59.6% | 65.3% | 60.6% | 59.4% |
| Good | 26.7% | 25.2% | 26.8% | 27.6% |
| Fair | 9.2% | 6.8% | 8.5% | 8.0% |
| Bad | 1.7% | 0.5% | 1.3% | 1.3% |
| Very Bad | 0% | 0.4% | 2.8% | 0.3% |
| Not Stated | 2.8% | 1.8% | 2.5% | 3.3% |

[10] https://maps.pobal.ie/WebApps/DeprivationIndices/index.html

4.54 The vast majority of residents across all administrative areas reported their health to be good or very good, and the overall trends are consistent across the EDs, county and state.

## Amenity and Community Resources

4.55 The closest retail outlets, schools and community facilities (such as GAA grounds, community centre and church) are located in Lavey, which is a linear settlement, along and bisected by the N3 national road. The closest services at Lavey are located c. 1.5km west of the application site but range up to c. 5km distance given their linear distribution along the main road.

4.56 Stradone village, located 4.5km to the north provides further community and amenity resources.

4.57 Health services such as GP surgeries and dentists are located within larger towns in the wider area, such as Cavan (c.10km northwest) and Ballyjamesduff (c.9km south). The nearest hospital is located at Cavan town. The HSE has responsibility for delivering healthcare services in the county (and State), and the rollout of improvement schemes such as the recently launched (June 2022) HSE Community Healthcare Cavan programme which aims enhance community healthcare services and reduce pressure on hospitals and other healthcare centres.

## Local Receptors

4.58 The application site is surrounded by agricultural activities, with coniferous woodland and minor worked gravel pits also dispersed in the wider area. Small-scale residential buildings and farmsteads are scattered throughout the surrounding landscape. There are c. 46 dwellings within a 1km radius of the application site boundary, c. 42 of which are occupied.

4.59 **Figure 4-1** identifies local receptors comprising dwellings within the locality and also shows 500m and 1000m offsets from the application boundary for the proposed development.

# Human Health Baseline

4.60 The baseline information presented in the preceding sections has not identified any particular sensitivities in relation to human health. The deprivation indices in the area do not highlight the area as disadvantaged and self-reported health status is positive and in line with the national situation. The scale of community facilities and amenities available to local residents is considered to be in proportion with their rural location. The proposed development, itself, will not introduce new communities to the local area and is not expected to create any additional demand on services.

4.61 A further review of **Table 4-1** in the context of the baseline population confirms that the main potential for the proposed development to cause negative impacts to human health is through the potential for noise/vibration emissions and emissions to air, land and water. These issues have been addressed in detail in their respective chapters of the EIAR and conclusions in relation to their resulting impact to human health are set out below.

4.62 The proposed development has potential for a substantial positive influence on the local economy through the enabling of the application site to continue providing a source of direct and indirect employment. This has potential knock-on effects in terms of contributing to the overall wellbeing of the local population. Given the nature and location of the proposed development, there is limited potential for it to contribute to local greenways or community services, however, the plan to return the application site to a wildlife habitat following extraction of mineral reserves within it is anticipated to have positive long-term effects on the environment and, therefore, wellbeing in general.

# IMPACT ASSESSMENT

## Evaluation Methodology

4.63 The evaluation of effects on employment, human health and amenity comprises a qualitative assessment based on the quantitative and qualitative analysis of potential effects on the environment undertaken in other chapters of this EIAR. The assessment also takes into account a review of relevant literature and professional judgement in relation to impact on population and human health.

## POPULATION

## Employment

### *Construction Stage Impacts*

4.64 The initial phase of the proposed development will require stripping of overburden on the application site. Given the pre-existence of the access and internal haul road of the existing quarry, as well as the processing and ancillary facilities, there will be limited construction activities.

4.65 This initial phase would provide some short-term employment to c. 2-3 no. machinery operators and site personnel and would be a continuation of employment in the local area. This would be a short-term, direct, temporary and positive effect that would not have significant effects on the environment.

### *Operational Stage Impacts*

4.66 During the operational phase, rock will be extracted using the methods outlined in Chapter 2 of this EIAR. The proposed development will represent a continuation of employment (from the existing P&S Civil Works Ltd. workforce) within the local area during the operational phase. The proposed working scheme will require at least 10 staff directly on-site. Therefore, the proposal will secure direct employment of up to 10 people for the duration of the extraction development, i.e. 15 years.

4.67 The proposed development will also provide indirect employment for a variety of other trades, including hauliers, sub-contractors, and maintenance contractors through indirect employment and downstream jobs in the construction and development sectors, principally in the Local Authority road projects for which the end products will ultimately be used.

4.68 Following the cessation of extraction operations (duration 15 years), there will be a loss of the main employment associated with the proposed development. However, it is anticipated that restoration works will be undertaken at the application site for an additional 2 year period, which will result in short term employment generation. Some limited, short-term employment would be provided in relation to the aftercare of the restored site over this 2 year period, through the establishment maintenance that will be carried out on a minimum quarterly basis during this period.

4.69 This is a medium-term, temporary, direct and positive effect on employment that would not have significant effects on the environment.

### *Post – Operational Stage Impacts*

4.70 Following restoration of the application site, there are no anticipated impacts on employment.

## Amenity and Community Resources

4.71 The key matters in relation to amenity in this instance are air (Chapter 8), noise (Chapter 10), landscape (Chapter 13) and traffic (Chapter 14).

### *Construction Stage Impacts*

4.72 The initial phase of operations, which requires soil stripping, has the potential to generate dust and noise, which could potentially cause nuisance. Changes to visual amenity will also result from the removal of overburden and creation of a new landscaping berm along the quarry extension area using this overburden material.

4.73 As outlined in Chapters 8, 10 and 13 of this EIAR, a number of mitigation measures are proposed. Based on the proposed mitigation measures, dust impacts will be insignificant, residual noise impacts will be negligible, landscape and visual effects will not be significant, and the proposed development is not expected to cause any capacity or safety issues. On this basis, it is considered that there would be no likely significant temporary or permanent effects on amenity during the construction stage. Chapter 11 identifies the utilities infrastructure within and surrounding the application site, which will be safeguarded during works.

### *Operational Stage Impacts*

4.74 During the operational stage, the potential impacts on air, noise, landscape and traffic include the following:

- the generation of dust, particularly during period of dry weather, through the extraction of rock and temporary stockpiling within the working quarry;
- the generation of noise by the operation of machinery;
- ongoing changes to visual amenity as rock is extracted and stockpiled;
- the generation of traffic by the export of end products from the site.

4.75 As outlined in Chapters 6, 8, 10, 13 and 14 of this EIAR, mitigation measures are proposed. Based on the proposed mitigation measures, dust impacts will be insignificant, residual noise impacts will be negligible, landscape and visual effects will not be significant, and the proposed development is not expected to cause any capacity or safety issues. On this basis, it is considered that there would be no likely significant effect on amenity during the operational stage.

### *Post – Operational Stage Impacts*

4.76 Following restoration, the potential effects on air, noise, and traffic related to the proposed development would cease owing to the cessation of extraction operations and the completion of restoration operations and the growth of vegetation.

4.77 Clearly, following the cessation of the proposed works, the appearance of the application site will have altered. As outlined in Chapter 13 of this EIAR, the landscape effects of the development would be ultimately minor/negligible and visual effects would be negligible.

4.78 Following restoration it is anticipated that the potential sources of traffic, dust and noise emissions associated with the proposed development would no longer remain. On this basis, it is considered that there would be no likely significant effect on amenity during the post-operational stage.

## HUMAN HEALTH

4.79 The key pathways in relation to human health in this instance are land, soils and geology (Chapter 6), surface water and groundwater (hydrology and hydrogeology) (Chapter 7), air (Chapter 8) and noise (Chapter 10).

### *Construction Stage Impacts*

4.80 The initial phase of operations would require the removal of overburden material, which will involve the use of HGVs and machinery at the application site. This phase has the potential to generate dust and noise and to cause the leakage or spillage of materials such as fuel to the soil and ultimately to groundwater.

4.81 As outlined in Chapters 6, 7, 8 and 10 of this EIAR, a number of mitigation measures are proposed and the residual effect of the proposed development in respect of land soils and geology and surface and groundwater is not likely to be significant, residual dust impacts will be insignificant, residual noise impacts will be negligible and its effect on traffic and transport is not considered to be significant.

4.82 In terms of human health, the sensitivity of the population is considered to be low, given the fact that the existing quarry is already established and the low and dispersed nature of receptors as set out within the population assessment. The technical assessments within the chapters above have concluded that the predicted changes in pollutants are well within statutory standards and WHO guidelines. The potential for non-threshold effects is noted, and is considered to be of a very low level over a short-term basis, therefore the magnitude is predicted to be low. In accordance with the significance matrix proposed by the IEMA Guide to Determining Significance for Human Health in EIA, therefore, the potential for effects on human health is considered to be minor adverse (not significant). On this basis, it is considered that there would be no likely significant temporary or permanent effects on human health during the construction stage following mitigation.

### *Operational Stage Impacts*

4.83 The operational stage of the development would relate to the extraction of rock and the restoration of the application area.

4.84 During the operational stage, the potential impacts on air, noise, water and soils may include the following:

- the generation of dust, particularly during period of dry weather, through the extraction of rock and the movement of stockpiled material;
- the generation of noise by the operation of machinery;
- the accidental leakage or spillage of fuels or other potential contaminant materials to soil and, ultimately to groundwater or surface water.

4.85 As outlined in Chapters 6, 7, 8 and 10 of this EIAR, mitigation measures are proposed. Based on the proposed mitigation measures, there is no predicted significant residual impact in respect of land, soils and geology or surface water/groundwater, dust impacts will be insignificant, residual noise impacts will be negligible, and its effect on traffic and transport is not predicted to be significant. On this basis, it is considered that there would be no likely significant effect on human health during the operational stage.

4.86 In terms of human health, the sensitivity of the population is considered to be low, given the fact that the existing quarry is already established and the low and dispersed nature of receptors as set out within the population assessment. The technical assessments within the chapters above

have concluded that the predicted changes in pollutants are well within statutory standards and WHO guidelines. The potential for non-threshold effects is noted and is considered to be of a very low level over a medium-term basis, therefore the magnitude is predicted to be low. In accordance with the significance matrix proposed by the IEMA Guide to Determining Significance for Human Health in EIA, therefore, the potential for effects on human health is considered to be minor adverse (not significant).

### *Post – Operational Stage Impacts*

4.87 Following restoration, the potential effects on air and noise would cease owing to the discontinuation of extraction operations, the removal of HGV and other machinery from the site and the re-establishment of natural vegetation across the previous extraction areas. The implementation of mitigation measures during the operational stage and the removal of all infrastructure during the restoration / remediation phase will ensure that there would no effects on soil and water during the post-operational stage.

4.88 Based on the proposed mitigation measures during the operational stage, the potential for residual effects related to soil and surface water/groundwater during the post operational stage are not predicted, and dust, noise and traffic generating activities will no longer remain in associated with the proposed development. On this basis, it is considered that there would be no likely significant effect on human health during the post-operational stage.

## Unplanned Events

4.89 According to the EPA guidelines, unplanned events, such as accidents, can include *"spill from traffic accidents, floods or land-slides affecting the site, fire, collapse or equipment failure on the site"*. The 2014 EIA directive refers to *"major accidents, and/or natural disasters (such as flooding, sea level rise, or earthquakes)"*.

4.90 In this instance, the vulnerability of the proposed development to accidents, unplanned events or natural disasters is relatively limited owing to the relatively simple nature of the development works, the established nature of the techniques and procedures to be followed, the material to be handled on site and the rural location of the proposed works remote from sensitive receptors.

4.91 Unplanned events in relation to the proposed development could potentially relate to:

- instability following the removal and placement of materials;
- spill from traffic accidents; and
- flooding.

4.92 Instability following excavation is unlikely to have any significant impacts on employment, human health or amenity, particularly beyond the site. In addition, works will be undertaken to ensure that the ground is graded appropriately, and that no large-scale instability occurs in the short term.

4.93 Chapter 14 of this EIAR indicates that the local road network would not be significantly impacted by traffic generated by the development and the risk of an accident resulting in a spillage is considered to be no greater in relation to this development than for any other form of development that relies on the transportation of goods and materials by HGVs. The potential for significant impacts on employment, human health in the wider population or amenity as a result of a road spillage is likely to be low and any such effects would likely be temporary.

4.94 Chapter 7 of this EIAR sets out further information on OPW and GSI mapping which is used to establish flood risk. The application site is not within an area that is considered to be at risk of flooding.

## Cumulative / Synergistic Impacts

4.95 A search of the Cavan County Council online planning search facility[11] was undertaken in relation to planning applications made in the last five years in the vicinity of the application site. The townlands of Drummuck, Mullymagowan, Tirlahode, Corfad, Beaghy, Drumgora, Killygrogan, Moher, Stravicnabo and Drumnaveagh were searched.

4.96 Planning permissions that have been granted relate mainly to agricultural development, one-off housing and minor domestic development.

4.97 The closest other quarry to the application site is the BD Flood operated Lavey Quarry, which is located c. 1.4km of the proposed development.

4.98 Given the relatively small scale of the permitted developments and given that established, extraction operations at both the existing landholding and the BD Flood site have previously operated successfully in tandem, it is not considered that the proposed development in conjunction with existing/proposed permitted development would result in significant cumulative effects on population or human health.

4.99 It is considered that the environmental consideration that has the greatest potential for cumulative impact on population and human health, and on amenity in particular, is traffic. It is however noted that the annual extraction rate of rock being sought for the proposed development is less than the permitted output rates that have been observed at the landholding for some years.

## Transboundary Impacts

4.100 It is not anticipated that the impacts of the proposed development would have any significant transboundary effects on population and human health.

## Interaction with Other Impacts

4.101 It is not anticipated that the effects of the proposed development on population and human health would interact significantly with other impacts. The impact of residual effects relating air, noise, water, soil, landscape and traffic on employment, human health and amenity are addressed above.

## 'Do-nothing Scenario'

4.102 In a 'do-nothing scenario', the additional land within the applicant's landholding would not be exploited for rock and the mineral reserves underlying the application site would remain in-situ. This would result in an adverse effect on employment and regional economic development because the opportunity for direct and indirect employment to be generated within the application site would be lost.

[11] https://www.eplanning.ie/CavanCC/searchtypes accessed 29 November 2022

# MITIGATION MEASURES

## Construction Stage

4.103 Mitigation measures to be adopted in relation to population and human health during the construction stage will relate to minimising the effect of the development on surrounding local receptors in relation to dust, noise, water, soil, traffic and landscape. These measures relate primarily to avoidance, prevention and reduction and are discussed in Chapters 6, 7, 8, 10, 11,13 and 14 of the EIAR.

| Chapter and Topic | Mitigation Measure |
|---|---|
| **6 Land, Soil & Geology** | • Soils will be managed on-site in line with best practice national guidelines (National Roads Authority, 2006) and Specification for Road Works Series 600 – Earthworks (Transport Infrastructure Ireland, March 2013).<br>• A specific Soil Management Plan will be developed for the site, which will follow the principles identified in Chapter 7 of this EIAR. |
| **7 Water** | • As per Construction/Operational Phase below. |
| **8 Dust** | • As per Construction/Operational Phase below. |
| **10 Noise** | • As per Construction/Operational Phase below. |
| **11 Material Assets** | • As per Construction/Operational Phase below. |
| **13 Landscape** | • As per Construction/Operational Phase below. |
| **14 Traffic** | • None proposed. |

## Construction / Operational Stage

4.104 Mitigation measures to be adopted in relation to population and human health during the operational stage will be similar to those usually undertaken during construction given the nature of the proposals. Therefore they are mainly grouped together below and relate to minimising the effect of the development on surrounding local receptors in relation to dust, noise, surface water and groundwater, soil, traffic and landscape. These measures relate primarily to avoidance, prevention and reduction and are discussed in Chapters 6, 7, 9, 10, 11, 13 and 14 of the EIAR.

4.105 These mitigation measures include the following:

| Chapter and Topic | Mitigation Measure |
|---|---|
| **6 Land, Soil & Geology** | • Adherence to Health and Safety Authority Safe Quarry Guidelines in relation to the Safety Health and Welfare at Work (Quarries) Regulations 2008 will limit the potential for unplanned events such as instability of quarry faces or instability. |
| **7 Water** | • The dewatering at the quarry will require the provision of a sump on the quarry floor, the pumping of water from the sump to the discharge point in the adjacent Mullymagowan Stream which flows north to the Stradone River. A bund will be constructed around the sump. This will minimise the volume of surface water runoff entering the sump. |

| Chapter and Topic | Mitigation Measure |
|---|---|
| | • Measures will be taken to ensure that all diesel fuel oil storage will be in a double skinned fuel tank in a secure container to prevent contamination of groundwater.<br>• A spill kit including high absorbency mats and pig tails will be available on site to be used in the event of a hydrocarbon spill.<br>• A programme of surface quality monitoring will be implemented, with samples taken from the sump and the discharge point on a monthly basis. If there is a deterioration in surface water quality as a result of construction related activities then measures to manage and reduce fines / fuels in any runoff will be implemented.<br>• Groundwater monitoring wells will be installed around the site and samples will be taken from the wells on a quarterly basis. If there is a deterioration in groundwater quality as a result of construction related activities then, as above, measure will be implemented.<br>• The Environmental Management System will continue to be implemented at the site. |
| **8 Air** | • Processing of rock carried out on quarry floor and in close proximity to working face to reduce the movement distance.<br>• Minimise drop heights when handling material. Protection from wind where possible. Water sprays to moisten handled material.<br>• Minimise distances of onsite haul routes.<br>• Use of water sprays / tractor & bowser to moisten surfaces during dry weather.<br>• Restrict vehicle speeds through signage / staff training.<br>• Location of haul routes away from sensitive receptors.<br>• Use of road sweeper to reduce the amount of available material for re-suspension.<br>• Seed surfaces of completed mounds / bunds of topsoil.<br>• Limit mechanical disturbance.<br>• Avoid working in adverse weather conditions and faulty dust filters.<br>• Carry out regular checks and maintenance works at the mobile processing plant.<br>• Retention of hedgerows.<br>• Proposed perimeter berms where necessary.<br>• Avoid working in adverse weather conditions.<br>• Materials placed directly into storage area or in progressive works. Avoid working in adverse/ windy conditions. |
| **10 Noise** | **Screening:**<br>• Existing and new perimeter berms and hedge planting screening surrounding the site will be retained.<br>**Plant:**<br>• all mobile plant used at the development will have noise emission levels that comply with the limiting levels defined in EC Directive 86/662/EEC and any subsequent amendments.<br>• all plant items will be properly and regularly maintained and operated |

| Chapter and Topic | Mitigation Measure |
|---|---|
| | according to the manufacturers' recommendations, in such a manner as to avoid causing excessive noise (i.e., all moving parts are kept well lubricated, all cutting edges are kept sharpened, the integrity of silencers and acoustic hoods are maintained).<br>• all plant will be fitted with effective exhaust silencers which are maintained in good working order to meet manufacturers' noise rating levels. Any defective silencers will be replaced immediately.<br>**Traffic:**<br>• all operations on site will be programmed to be carried out during daytime hours only.<br>• care will be taken when loading vehicles to reduce or minimise potential disturbance to local residents.<br>• access / internal haul roads will be kept clean and maintained in a good state of repair, i.e., any potholes are filled, and large bumps removed, to avoid unwanted rattle and "body-slap" from heavy goods vehicles.<br>• vehicles waiting within the quarry will be prohibited from leaving their engines running and there should be no unnecessary revving of engines.<br>**Blasting**<br>• Blasting to be carried out between the hours of 10:00 hrs to 17:00 hrs from Monday to Friday (except in emergencies or for health and safety reasons beyond the control of the operator). A blast must be carried out on site on the specified day, as concerns over security does not allow for explosives to be stored on site.<br>• no blasting to be carried out on Saturdays, Sundays or public holidays.<br>• blast notifications to be provided for residences within the vicinity of the quarry and by pre and post siren warnings.<br>• all blasting operations to be carried out by a certified 'shotfirer' in accordance with the relevant health and safety regulations.<br>• the optimum blast ratio is maintained, and the maximum instantaneous charge is optimised.<br>• to avoid any risk of damage to properties in the vicinity of the site, the groundborne vibration levels from blasting does not exceed a peak particle velocity of 12 mm/sec. |
| **11 Material Assets** | • Implementation of established good practice and housekeeping |
| **13 Landscape** | • The retention of all existing boundary vegetation, as well as the proposed woodland planting along the south-western boundary. |
| **14 Traffic** | • None required. |

## Post – Operational Stage

4.106 Owing to the nature of the proposed development, few mitigation measures will be required in relation to population and human health during the post-operational stage.

4.107 These mitigation measures include:

| Chapter and Topic | Mitigation Measure |
|---|---|
| **6 Soil** | • Following the restoration of the site initial monitoring will be required over a period of three years to ensure that the restored soil and land-use is successful and that the remaining quarry faces are stable. |
| **7 Water** | • None required |
| **8 Dust** | • None required |
| **10 Noise** | • None required |
| **13 Landscape** | • None required - vegetation surrounding the quarry void would continue to mature and locally occurring grass and scrub species would colonise the quarry benches and fissures in the quarry faces. |
| **14 Traffic** | • None required |

4.108 The majority of the effects of the proposed development will diminish or cease following the cessation of operations.

4.109 No specific mitigation measures are proposed in relation to human health and population.

# RESIDUAL IMPACT ASSESSMENT

## Construction / Operational Stage

4.110 As shown in Chapters 6 (Land, Soils and Geology), 7 (Water), 8 (Air), 10 (Noise), 13 (Landscape) and 14 (Traffic) of this EIAR, the mitigation measures would successfully reduce the effects of the proposed development during the construction / operational phases as follows:

- Air: Insignificant
- Noise : Negligible
- Land, Soils and Geology : Not Significant
- Water : Not Significant
- Traffic : Negligible (based on the fact that no capacity issues or constraints have been identified)
- Landscape: Not Significant

## Post – Operational Stage

4.111 As shown in Chapters 6, 7, 8, 10, 13 and 14 of this EIAR, the mitigation measures would successfully reduce the effects of the proposed development during the post-operational phase as follows:

- Dust : None
- Noise : None
- Land, Soils and Geology: Not Significant
- Water : Not Significant

- Traffic : None
- Landscape : Not Significant

# MONITORING

4.112 As outlined in Chapters 6, 7, 8 and 10 of this EIAR, monitoring in relation to the proposed development will be undertaken in respect of noise, air, groundwater and soil. On this basis, no specific monitoring is required in relation to population and human health.

## Noise

4.113 Noise monitoring shall be to be undertaken around the application site. Noise monitoring locations shall be reviewed and revised where and as/when necessary. The results of the noise monitoring shall be submitted to Cavan County Council on a regular basis for review and record purposes.

## Air

4.114 Dust deposition monitoring will continue to be undertaken at the application site. Dust monitoring locations shall be reviewed and revised where and as/when necessary. The results of the dust monitoring shall be submitted to Cavan County Council on a regular basis for review and record purposes.

## Land, Soils and Geology

4.115 As set out above under 'Mitigation Measures', following the restoration of the site initial monitoring will be required over a period of three years to ensure that the restored soil and land-use is successful and that the remaining quarry faces are stable.

## Surface Water

4.116 It is recommended that the surface water quality in the quarry sump and in the adjacent Mullymagowan Stream is monitored on a monthly basis to ensure the quarry operations do not adversely impact on the local surface water environment.

4.117 Samples will be taken from two points along the stream; at the discharge point and further downstream before the stream reaches Lake Corfad. These proposed monitoring points are mapped on **Figure 7-9** within Chapter 7 of this EIAR.

4.118 The three samples will be tested for a standard surface water quality suite at an appropriate laboratory and results will be screened against relevant legislation and guideline concentration limits for all parameters.

4.119 In addition, a flow meter will be installed at the point of discharge to control and monitor water volumes being discharged off site during the operational phase of the proposed development.

4.120 Any additional surface water monitoring requirements will be agreed with Cavan County Council prior to the commencement of any operations on site. Any conditions set out in the discharge licence will also be considered as part of the surface water monitoring programme.

## Groundwater

4.121 The quarry extension will initially be worked dry above the water table and thereafter through the use of pumps within the quarry void after the groundwater table has been intercepted.

4.122 Groundwater level and quality monitoring will be carried out during the construction and operational stages. This will allow for groundwater quality sampling (quarterly) and groundwater level data (continuous or monthly) to be collected from the proposed development site.

4.123 Any additional groundwater monitoring requirements will be agreed with Cavan Co. Co. prior to the commencement of any operations on site.

# REFERENCES

**Central Statistics Office** Census 2011

**Central Statistics Office** Census 2016

**Central Statistics Office** Census 2022 Preliminary Results

**Environmental Protection Agency (2022).** *Guidelines on the Information to be contained in Environmental Impact Assessment Reports*

**Cavan County Council (2022)** Cavan County Development Plan 2022 – 2028

# FIGURES

## Figure 4-1
## Local Receptors